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A

DESCRIPTION

OF THE

A M E R I C A N

YELLOW FEVER,

WHICH PREVAILED AT

CHARLESTON,

IN SOUTH CAROLINA,

IN THE YEAR 1748.

BY DOCTOR JOHN LINING,

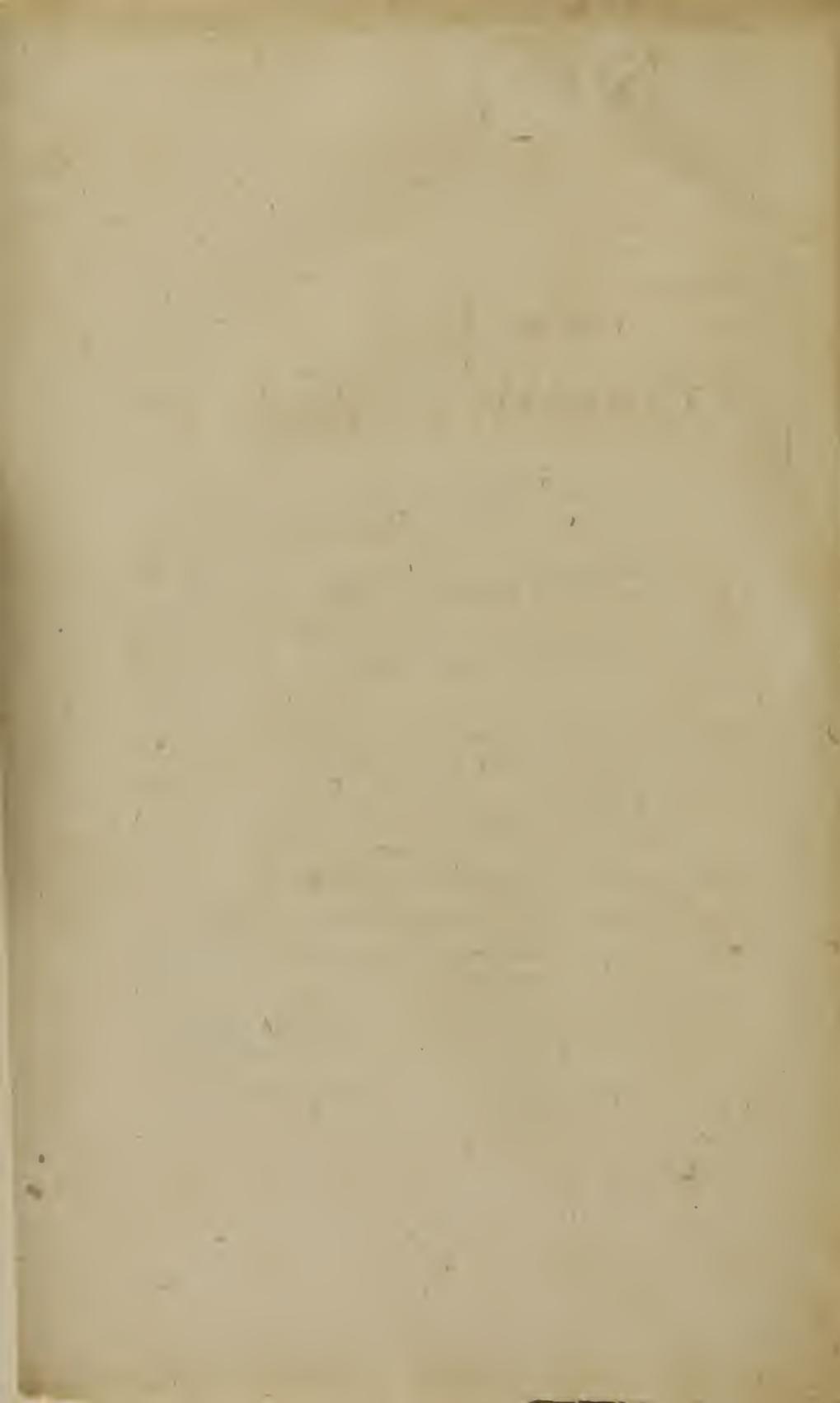
PHYSICIAN AT CHARLESTON.

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1799.





*A Description of the American Yellow Fever,
in a Letter from Dr. JOHN LINING, phy-
sician at Charles-town, in South Carolina,
to Dr. ROBERT WHYTT, Professor of
Medicine in the University of Edinburgh.**

CHARLESTOWN, December 14, 1753.

SIR,

" IN obedience to your desire, I have sent
" you the history of the yellow fever as
" it appeared here in the year 1748, which,
" as far as I can remember, agreed in its
" symptoms with the same disease, when it
" visited this town in former years. In this
" history, I have confined myself to a faith-
" ful narration of facts, and have avoided
" any physical inquiry into the causes of the
" several symptoms in this disease; as that
" would have required more leisure than I
" am, at present, master of, and would per-
" haps have been less useful than a plain de-
" scription.

" I

* March 7, 1754.

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“ I wrote this history, so far as it relates to
“ the symptoms and prognostics, in the year
“ 1748, when we had the disease last in this
“ place; intending afterwards, if it return-
“ ed, to add, from further experience, the
“ method of cure, and likewise an account
“ of any other symptoms which might at-
“ tend it; but as no such opportunity has
“ offered, I must now omit that part. How-
“ ever, I hope the description which I have
“ given of this dreadful malady, which so
“ frequently rages like the plague in the
“ southern parts of America, is so full, that
“ a physician may, from thence, not only
“ form a true judgment of its nature, but
“ likewise be able to deduce and communi-
“ cate some more certain method of cure,
“ than has perhaps hitherto been used.

“ I am sorry I could not give a fuller
“ account of the dissections of those who
“ died of this disease, having unfortunately
“ lost my notes taken from those dissections.

I am, &c.

I. THAT

I. THAT *fever*, which continues two or three days, and terminates without any critical discharge by sweat, urine, stool, &c. leaving the patient excessively weak, with a small pulse, easily compressible by very little motion, or by an erect posture; and which is soon succeeded with an icteritious colour in the white of the eyes and the skin, vomiting, haemorrhages, &c. and these, without being accompanied with any degree of a febrile pulse and heat, is called in America, the *yellow fever*.

II. THIS fever does not seem to take its origin from any particular constitution of the weather, independent of *infectious miasmata*, as Dr. Warren* has formerly well observed.

FOR within these twenty-five years, it has only been four times epidemical in this town, namely, in the autumns of the years 1732, 39, 45 and 48, though none of these years (excepting that of 1739, whose summer and autumn were remarkably rainy) were either warmer

* In his Treatise concerning the malignant fever in Barbadoes.

warmer or more rainy (and some of them less so) than the summers and autumns were in several other years, in which we had not one instance of any one being seized with this fever; which is contrary to what would probably have happened, if particular constitutions of the weather were productive of it, without infectious *miasmata*. But that this is really an infectious disease, seems plain, not only from this, that almost all the nurses catched it and died of it; but likewise, as soon as it appeared in town, it soon invaded newcomers, those who never had the disease before, and country-people when they came to town, while those who remained in the country escaped it, as likewise did those who had formerly felt its *dire* effects, though they walked about the town, visited the sick in all the different *stadia* of the disease, and attended the funeral of those who died of it. And lastly, whenever the disease appeared here, it was easily traced to some person who had lately arrived from some of the West-Indian Islands, where it was epidemical. Although the infection was spread with great celerity through the town, yet if any from the country received it in town, and sickened on their return home,

home, the infection spread no further, not even so much as to one in the same house.

III. THE subjects which were susceptible of this fever, were both sexes of the white colour, especially strangers lately arrived from cold climates, Indians, Mistees, Mulattoes of all ages, excepting young children and of those only such as had formerly escaped the infection. And indeed it is a great happiness that our constitutions undergo such alterations in the small-pox, measles and yellow fever, as for ever afterwards secure us from a second attack of those diseases. There is something very singular in the constitution of the Negroes, which renders them not liable to this fever; for though many of these were as much exposed as the nurses to the infection, yet I never knew one instance of this fever amongst them, though they are equally subject with the white people to the *bilious fever*.

IV. THIS fever began in the middle or rather towards the end of August, and continued till near the middle of October, when the weather became cold enough to prevent its

its further progress. In the beginning of August, the weather was warmer than I had ever known it in that month: the mercury in Farenheit's thermometer, for some days at 2 o'clock, p. m. rose, in the shaded air, to the 96th degree, at which time several people died of apoplexies. The latter part of August and the first week in September were much more temperate; the weather being then much as usual at that season of the year. The second week in September was cold, the wind being constantly easterly and the weather cloudy; after which time I kept a register of the heat of the shaded air; an abstract of which follows.

IN the latter part of September, and from the 1st to the 18th of October,

	Septemb.	Octob.
The mean heat at 2 p. m. was	72	65
The mean nocturnal heat was	68	54
The greatest heat at 2 p. m. was	79	75
The least heat at 2 p. m. was	60	52
The greatest nocturnal heat was	71	70
The least nocturnal heat was	62	42
The greatest increase of heat in 24 hours was	13	17
		The

The greatest decrease of heat in

24 hours was

9 22

IN all the month of September, and in the greatest part of October, the wind was easterly.

THE depth of the rain in August, September and October respectively, was 6.881, 7.442 and 5.550 inches; which, though it exceeded the rain of these three months taken together at a medium, from the ten preceding years, by 5.570 inches, yet it was inferior to that which fell in the same months in several other years; for in the years 1747, 50, 51 and 52, there fell respectively, in those three months of these years, above 21, 22, 24 and 26 inches of rain.

V. For a day or two before the attack of the fever, people in general complained of a headache, pain in the loins and extremities, especially in the knees and calves of the legs, loss of appetite, debility and a spontaneous lassitude.

B

SOME,

SOME, however, were seized suddenly, without any such previous symptoms.

VI. AFTER a chillness and horror, with which this disease generally invades, a fever succeeded, in which,

1. THE *pulse* was very frequent till near the termination of the fever, and was generally full, hard, and consequently strong: in some, it was small and hard, in others, soft and small; but in all those cases, it frequently varied in its fulness and hardness. Towards the termination of the fever, the pulse became smaller, harder, and less frequent. In some there was a remarkable throbbing in the carotids and in the *hypochondria*; in the latter of which it was sometimes so great, that it caused a constant tremulous motion of the *abdomen*.

2. THE *heat*, generally, did not exceed 102 degrees of Farenheit's thermometer; in some it was less, it varied frequently, and was commonly nearly equal in all parts, the heat about the *præcordia* being seldom more intense than in the extremities, when these were kept covered. In the first day of the disease,

disease, some had frequent returns of a sense of chillness, though there was not any abatement of their heat. In a few, there happened so great a remission of the heat for some hours, when at the same time the pulse was soft and less frequent and the skin moist, that one from these circumstances might reasonably have hoped that the fever would only prove a remittent or intermittent. About the end of the second day, the heat began to abate.

3. THE *skin* was sometimes (though rarely) dry ; but oftener, and indeed generally, it was moist and disposed to sweat.

ON the first day, the sweating was commonly profuse and general ; on the second day, it was more moderate : but on both these, there happened frequent and short remissions of the sweatings ; at which times the febrile heat increased, and the patient became more uneasy. On the third day, the disposition to sweat was so much abated, that the skin was generally dry ; only the forehead and backs of the hands continued moist.

4. The

4. THE *respiration* was by no means frequent or difficult, but was soon accelerated by motion, or the fatigue of drinking a cup of any liquid.

5. THE *tongue* was moist, rough and white, even to its tip and edges. On the second day, its middle in some was brown. On the third day, the whiteness and roughness of the tongue began to abate.

6. THE *thirst* in very few was great.

7. A *nausea*, *vomiting* or frequent *reachings* to vomit, especially after the exhibition of either medicines or food, came on generally the third day, as the fever began to lessen; or rather as the fullness of the pulse, heat, and disposition to sweat began to abate. Some indeed, but very few, on the first day, had a vomiting either bilious or phlegmatic.

8. VERY few complained of *anxiety* or oppression about the *præcordia* or *hypochondria*, nor was there any tension or hardness about the latter.

9. ON

9. ON the first day they generally *dозed* much, but afterwards were very *watchful*.

10. *Restlessness* and almost continual *jactations* came on the second day.

11. A great *despondency* attended the sick from the first attack.

12. THE *strength* was greatly *prostrated* from the first attack.

13. THE *pain* in the *head*, *loins*, &c. of which they had complained (V) before the attack, were greatly increased, and in some, the pain in the forehead was very acute and darting; but those pains went generally off the second day.

14. THE *face* was flushed, and the eyes were hot, inflamed and unable to bear much light.

15. ON the first day, many of them, at times, were a little *delirious*, but afterwards not until the recess of the fever.

16. THE *blood* saved at venæsection had not any inflammatory crust ; in warm weather, it was florid like arterial blood, and continued in one soft homogeneous-like mass, without any separation of the *serum* after it was cold. When there was any separation, the *craffamentum* was of too lax a texture.

17. THE *stools*, after the first day, were fetid, inclined to a black colour, and were very rarely bilious, soft or liquid, excepting when forced by art ; for an obstinate costiveness attended the febrile state.

18. THE *urine* was discharged in a large quantity, was pale, sometimes limpid, and rarely of a higher than a straw colour, except when the weather was very warm, and then it was more saturated, of a deep colour, and discharged in smaller quantities. It had a large cloud, except when it was very pale or limpid ; but more generally it had a copious, white sediment, even in the first day of the fever.

ON the second day, the urine continued to be discharged very copiously ; in some, it was

was then turbid, and deposited a more copious sediment, than on the first day ; this sediment was sometimes of a brownish colour; in which case it was generally followed by bloody urine, either about the end of the second or beginning of the third day. The colour and quantity of the urine, discharged in equal times, were remarkably variable, being now limpid, then of a deeper colour, now discharged in a larger, then in a smaller quantity, which could not be ascribed to any change made either in the quantity or quality of the drink, &c.

VII. THE fever accompanied with those (VI.) symptoms, terminated on the third day, or generally in less than 72 hours from the first attack, not by any assimilation, or coction and excretion of the morbid matter; for if by the latter, there would have been some critical discharge by sweat, urine, stool, or otherwise, none of which happened; and if, by the former, nothing then would have remained but great debility. No; this fever did not terminate in either of these salutary ways, excepting in some, who were happy enough to have the disease conquered in the beginning

beginning by proper evacuations, and by keeping up a plentiful sweat, till the total solution of the fever, by proper mild diaphoretics and diluents. But those who had not that good fortune, however tranquil things might appear at this period, (as great debility and a little yellowness in the white of the eyes, seemed then to be the chief complaints, excepting when the vomiting continued), yet the face of affairs was soon changed ; for this period was soon succeeded by the second *stadium*; a state, though without any fever, much more terrible than the first : the symptoms in which were the following.

VIII. I. THE *pulse*, immediately after the recess of the fever, was very little more frequent than in health, but hard and small. However, tho' it continued small, it became, soon afterwards, flower and very soft; and this softness of the pulse remained as long as the pulse could be felt. In many, in this stage of the disease, the pulse gradually subsided, until it became scarce perceptible ; and this, notwithstanding all the means used to support and fill it ; and when this was the case, the icteritious-like suffusion, the vomiting

miting, *delirium*, restlessness, &c. increased to a great degree. In some, the pulse, after being exceedingly small and scarce perceptible, recovered considerably its fullness; but that favourable appearance was generally of but short continuance.

2. THE *heat* did not exceed the natural animal heat; and when the pulse subsided, the skin became cold, and the face, breast and extremities acquired somewhat of a livid colour.

3. THE *skin* was dry when the weather was cold, but was moist and clammy when the weather was hot.

4. THE *respiration* was natural or rather slow.

5. THE *tongue* was moist and much cleaner than in the former (VI. 5.) stage, its tip and edges, as also the gums and lips, were of a more florid red colour than usual.

6. VERY few complained of *thirst*, though they had a great desire for cold liquors.

7. THE vomiting or reaching to vomit increased, and in some was so constant, that neither in medicines nor aliment of any kind were retained. Some vomited blood; others only what was last exhibited, mixed with phlegm; and others again had what is called the *black vomit*.* The reaching to vomit continued

* That which is called the *black vomit*, at first sight, appears to be black; but on a more careful examination, I observed, that this colour proceeded from a great quantity of small, flakey, black substances which floated in the liquor thrown up by vomit; but the colour of this liquor was much the same with that which the patient had last drank, and was by no means black. Those black flakey substances are the bile mixed with, or adhering to the *mucus* which lined the stomach. For, upon dissection of those who died of this disease, not only in this but former years, I always observed that the *mucus* of the stomach was abraded, and the bile in its *cystis* was black and sometimes very viscid. In a lad who died of this disease in the beginning of the fourth day, and who was immediately opened, the bile was not only black, but had the consistence of thick *Venice-turpentine*, and was exceedingly tough. On the inside of the stomach, there were several carbuncles or gangrenous specks. And in all those I have dissected, who have died of this disease, I have not only always observed the same, but likewise that the blood was very fluid, and the vessels of the *viscera* much distended; from whence I have been very inclined to think, when the disease was not conquered in its first *stadium*, that, about the time of the termination of the fever, there was a *metathesis* of the morbid matter to the *viscera*.

continued a longer or shorter time, according to the state of the pulse ; for as that became fuller, and the heat greater, the reaching to vomit abated, and *è contra*.

8. THE inquietude was very obstinate, and when they dozed, their slumbers were but short and unrefreshing. There were some who were drowsy ; but these always awaked, after the shortest slumbers, with a great dejection of spirits and strength.

9. THE *jactations* or restlessness was surprising ; it was frequently scarce possible to keep the patients in bed, though, at the same time, they did not complain of any anxiety or uneasiness ; but if asked how they did, the reply was, *Very well*.

10. THE debility was so great, that, if the patient was raised erect in the bed, or, in some, if the head was only raised from the pillow, while a cup of drink was given, the pulse sunk immediately, and became sometimes so small, that it could scarcely be felt ; at this time, they became cold, as in a *horripilatio*, but without the anserine-like skin : their

their skin became clammy, the *delirium* increased, their lips and skin, especially about the neck, face and extremities, together with their nails, acquired a livid colour.

11. THE *delirium* returned and increased ; it was generally constant in those whose pulse was small and subsiding.

12. THE inflammation of the *tunica conjunctiva* or white of the eyes increased much, but without pain.

13. A *yellowness* in the white of the eyes, if it did not appear before in the febrile state, became now very observable, and that icteritious-like colour was soon diffused over the whole surface of the body, and was continually acquiring a deeper saffron-like colour. In some indeed no yellowness was observable, excepting in the white of the eyes, until a little before death, when it increased surprisingly quick, especially about the breast and neck.

14. THERE were many small *specks*, not raised above the skin, which appeared very thick

thick in the breast and neck ; but less so in the extremities, and were of a scarlet, purple or livid colour.

15. IN women the *menses* flowed, and sometimes excessively, though not at their regular periods.

16. THERE was such a putrid dissolution of the blood in this *stadium* of the disease, that, besides the vomiting of blood formerly mentioned, and the bloody urine soon to be taken notice of, there were *haemorrhagies* from the nose, mouth, ears, eyes, and from the parts which were blistered with *cantharides*. Nay, in the year 1739 or 1745, there was one or two instances of an *haemorrhage* from the skin, without any apparent puncture or loss of any part of the scarf-skin.

17. AN obstinate *constitutiveness* continued in some ; in others, the stools were frequent and loose ; in some, they were black, liquid, large and greatly fatiguing ; in others, when the stools were moderate, even though they were black, they gave great relief ; in others again, the stools nearly resembled tar
in

in smoothness, tenacity, colour and consistence.

I S. THE *urine* was discharged in a large quantity, in proportion to the drink retained by the patient: it was pale if the patient was not yellow; but if yellow, then it was of a deep-saffron colour; in either case it had a sediment, or at least a large cloud, which remained at the bottom of the glass; in some, it was very turbid, in others, it was bloody, and the quantity of blood discharged with the urine bore always some proportion to the state of the pulse; when that became fuller, the quantity of blood in the urine was diminished: when the pulse subsided, the bloody urine increased, and even returned after it had ceased some days, soon after the pulse became smaller.

THIS stage of the disease continued sometimes seven or eight days before the patient died.

IX. WHEN this *stadium* (VIII.) of the disease terminated in health, it was by a recess or abatement of the vomiting, hæmorrhagies, *delirium*,

delirium, inquietude, jactations, and icteritious-like suffusion of the skin and white of the eyes ; while, at the same time, the pulse became fuller, and the patient gained strength, which, after this disease, was very slowly.

BUT when it terminated in death, those (VIII.) symptoms not only continued, but sooner or later increased in violence, and were succeeded with the following, which may be termed the *third stadium* of the disease, which quickly ended in death.

X. THE pulse tho' soft became exceedingly small and unequal ; the extremities grew cold, clammy and livid ; the face and lips, in some, were flushed ; in others, they were of a livid colour ; the livid specks increased so fast, that in some, the whole breast and neck appeared livid ; the heart palpitated strongly ; the heat about the *præcordia* increased much ; the respiration became difficult, with frequent sighing ; the patient now became anxious, and extremely restless ; the sweat flowed from the face, neck and breast ; blood flowed from the mouth, or nose

nose or ears, and in some, from all those parts at once; the deglutition became difficult; the hiccoughs and *subsultus* of the tendons came on, and were frequent; the patients trifled with their fingers, and picked the naps of the bed-cloaths; they grew comatous, or were constantly delirious. In this terrible state, some continued eight, ten or twelve hours before they died, even after they had been so long speechless, and without any perceptible pulsation of the arteries in the wrists; whereas, in all other acute diseases, after the pulse in the wrists ceases, death follows immediately. When the disease was *very* acute, violent convulsions seized the unhappy patient, and quickly brought this *stadium* to its fatal end. After death, the livid blotches increased fast, especially about the face, breast, and neck, and the putrefaction began very early, or rather increased very quickly.

XI. THIS was the progress of this terrible disease through its several *stadia*. But in hot weather, and when the symptoms in the first stage were very violent, it passed thro' those stages, as Dr. *Warren* has likewise observed,
with

with such precipitation, that there was but little opportunity of distinguishing its different *stadia*; the whole tragedy having been finished in less than 48 hours.

XII. It was remarkable, that, 1. The infection was increased by warm and lessened by cold weather. 2. The symptoms in the several *stadia* were more or less violent, according to the heat or coolness of the weather. In hot days, the symptoms were not only more violent, but in those who seemed, in moderate weather, to be on the recovery, or at least in no danger, the symptoms were all so greatly heightened, when the weather grew considerably warmer, as frequently to become fatal. In cool days, the symptoms were not only milder, but many, who were apparently in great danger in hot days, were saved from the very jaws of death by the weather becoming happily cooler. 3. The disease was generally more fatal to those who lay in small chambers not conveniently situated for the admission of fresh air, to those of an athletic and full habit, to strangers who were natives of a cold climate, to those who had the greatest dread of it, and to

D those

those, who, before the attack of the disease, had overheated themselves by exercise in the sun, or by excessive drinking of strong liquors; either of which indeed seemed to render the body more susceptible of the infection. Lastly, the disease proved most certainly fatal to valetudinarians, or to those who had been weakened by any previous disease.

XIII. THE *prognostics* in the first *stadium* are these. 1. The more acute and constant the pains are in the head, loins, knees, &c. the more the eyes are inflamed; the greater their inability is to bear light, and the more the face is flushed at the first attack, the fever and all the symptoms (VI.) in the first *stadium* will be the more violent. 2. The more intense the symptoms are in the first state, the sooner will the fever terminate. 3. The sooner the disease runs thro' the first *stadium*, the shorter will be the duration of the second, and *& contra*. 4. The shorter the duration is of the first, the greater and more certain is the danger in the second state. For when the fever terminated before the beginning of the third day, death seemed *inevitably*

inevitably to be the consequence, as there was then no possibility of supporting the pulse, and as all the bad symptoms were then hurried on with such precipitation, that the patient generally died before the end of the fifth day, excepting a considerable coolness of the weather happily intervened ; but on the contrary, it was a favourable circumstance when the fever was protracted to the end of the third day, without any remarkable hardness or depression of the pulse. 5. A great depression of the pulse, about the termination of the fever, is bad, since, from that circumstance, the vomitings, incessant jaétations, the coldness and lividness of the extremities, hæmorrhagies, *delirium*, &c. are ushered in with surprising celerity. 6. The more the strength is prostrated from the first attack, the greater is the danger. 7. A vomiting coming on early in the disease, and continuing or increasing, is bad, and generally presages the *black vomit*. 8. A sediment in the urine in the first and second day of the disease is bad, and the more copious the sediment is, the greater is the danger.

XIV. THE prognostics in the second *stadium* are these: 1. An early yellowness in the white of the eyes is bad: when it is observable about the end of the second day, in the first *stadium*, the patient generally dies about the beginning of the fourth day from the first attack of the disease. But when the yellowness does not appear till the end of the third day, if the patient does not recover, the disease sometimes continues to the 9th or 10th day of the second *stadium* before the patient dies. When the yellowness of the skin and eyes increases fast and acquires soon a deep icteritious-like colour, the greatest danger is to be apprehended. 2. If the inflammation of the white of the eyes increases, it is bad. 3. The more inflamed and bloody-like the skin is where it has been blistered, the greater is the danger. 4. If the vomiting continues or increases, it is bad, but the *black vomiting* is generally mortal. 5. When the pulse varies frequently in its fullness, being sometimes small, then fuller, it is bad. But there was less dependence to be had on the pulse in this than is common in other diseases; for in some patients, in the second stage of the disease,

even

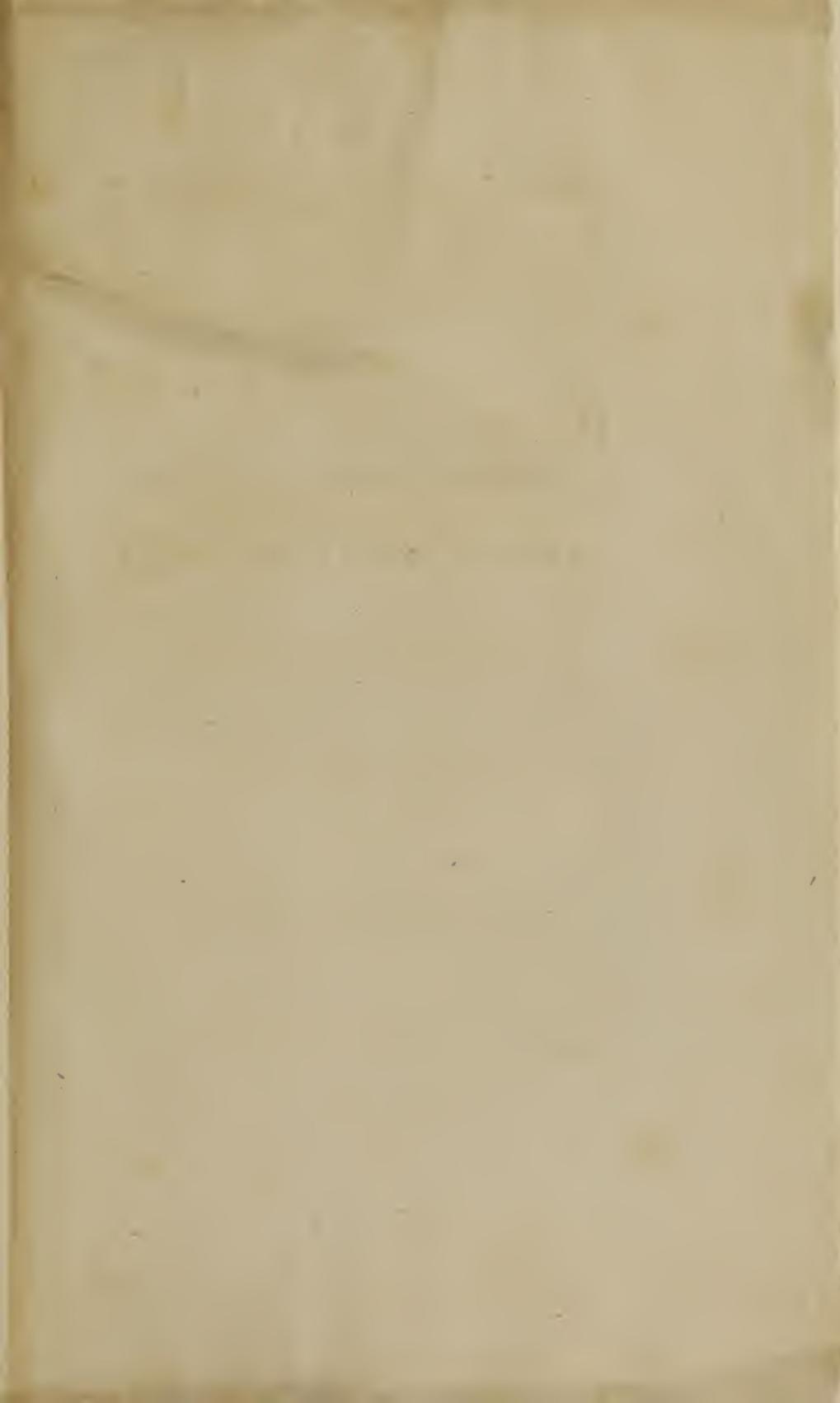
even within a few hours of their death, the pulse, with respect to its fullness, softness, equality and frequency, has continued like that of one in perfect health, although, from the other symptoms, the death of the patient could be foretold with great certainty. 6. The more the strength of the patient is reduced in the first, the greater is the danger in the second *stadium*. 7. Great restlessness, inquietude, an early *delirium* and a continuation of it are very bad. 8. Livid blotches about the neck and breast, a lividness of the lips and nails, flushing of the face, or a livid colour thereof, are sure signs of the quick approach of death. 9. Frequent loose stools, which give not any relief, are bad, and the sooner they spontaneously happen, the greater is the danger: but those which are black, and continue so without any abatement of the symptoms, are generally mortal. 10. Bloody urine and all haemorrhagies, excepting slight ones from the nose, are bad; and the more copious they are, the greater is the danger. But a flux of the *menses*, though not at their regular period, if attended with an abatement of the symptoms, is a favourable circumstance, otherwise

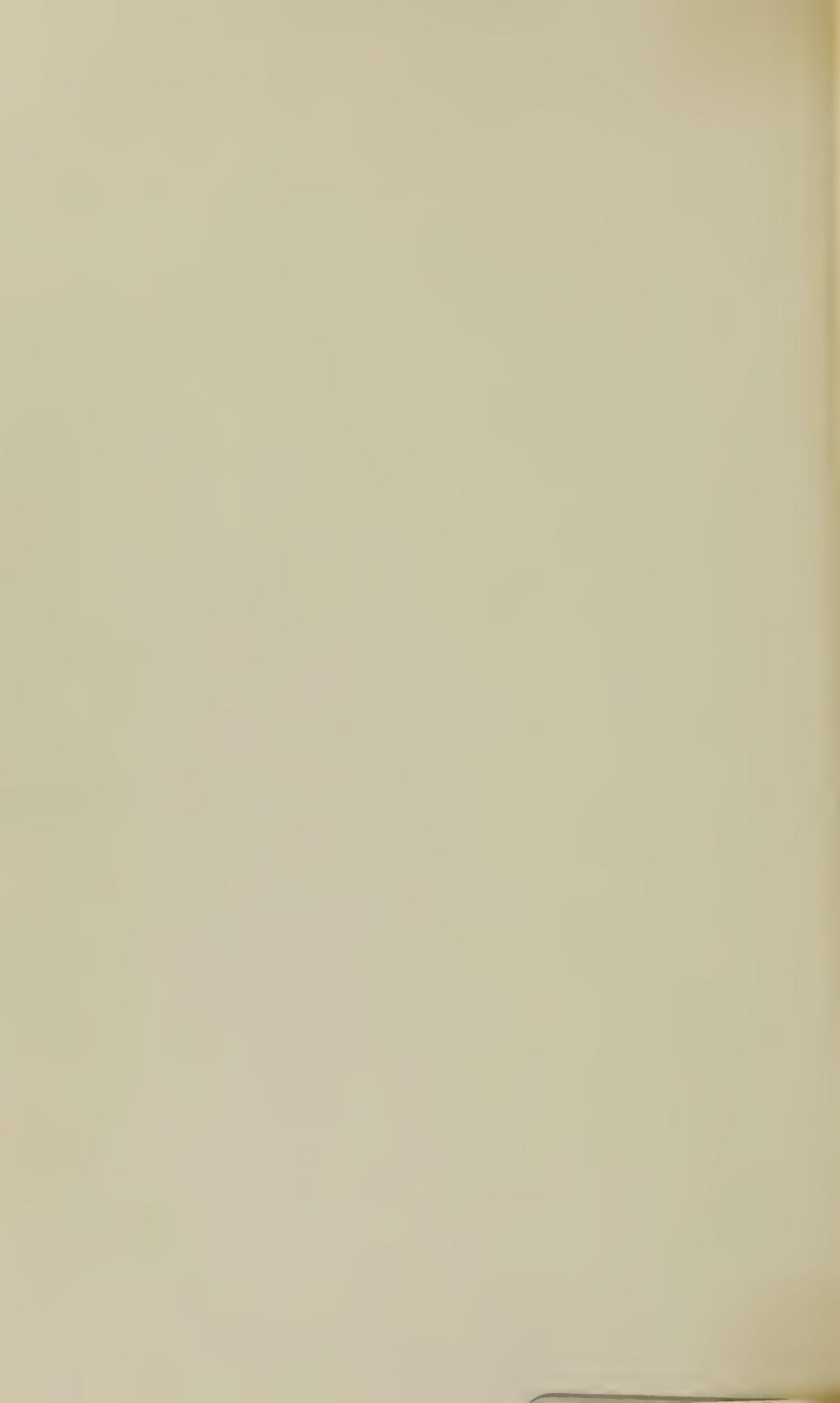
otherwise it is bad. 11. A suppression of urine, especially in those, who, in the course of the disease, have had large discharges that way, is a certain sign of the quick approach of death.

XV. As to the prognostics in the third (X) stadium, it is sufficient to say,

“ Nature, alas ! was now surpriz’d,
 “ And all her forces seiz’d,
 “ Before she was how to resist advis’d.”*

* Dr. Sprat’s Account of the plague of Athens.





Med. Hist.

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